Brexit's shades of green – (missing) the opportunity to transform farming in England?

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BREXIT'S SHADES OF GREEN – (MISSING) THE OPPORTUNITY TO TRANSFORM FARMING IN ENGLAND?

Abstract

The UK Government's 'green Brexit' includes fundamental reform of agriculture. We use resilience thinking to examine the complex relationship between farming policy and environmental sustainability. Farming is a social ecological system which will be disturbed by leaving the EU's Common Agricultural Policy. Reforms could reinforce persistence of the status quo or shape transformation to 'better' sustainability. We argue Brexit is a once-in-a-generation opportunity for the hegemony of sustainable intensification to be challenged by enhanced agro-ecological farming practices. The interdependency of social and ecological factors is a critical threshold for transformative change, which we explore through three key sites of struggle: farmers' cultural identity, connection to land and security. We suggest transformative law and governance measures built upon Wild Law jurisprudence and resilience principles of diversity, scale, flexibility, relationality, education and participatory decision-making. We conclude that the Government's approach falls short of the transformation needed for a resilient, sustainable farming system.

1. Introduction

The UK Government claims it is pursuing a 'green Brexit' as it leaves the European Union, boldly asserting that reform of agriculture, forestry, land use and fishing will seize a 'once-in-a-lifetime' opportunity and 'hand over the planet to the next generation in a better condition than when we inherited it'.[1] This article uses resilience thinking to question the validity of this claim in the specific context of agriculture and farming. Brexit undoubtedly administers a shock to a system driven for

[1] Department for Environment Food & Rural Affairs (DEFRA), *A Green Future: Our 25 Year Plan to Improve the Environment* (DEFRA, January 2018) 9

over 40 years by the EU's Common Agricultural Policy ('CAP'). However, we argue that the Government's proposals in its Consultation Paper ('CP') [2] and Agriculture Bill ('the Bill'),[3] do not go far enough to secure the long-term sustainability of the complex social ecological system (SES) embodied in farming. The Government's principal policy shift is that public money should only support public goods and that a new environmental land management system should reflect this.[4] In our view, this predominantly financial prism is insufficient to enable farming to use Brexit to 'bounce forward' on a different, greener, trajectory. More fundamental strategies are required to understand and work with the multi-dimensional and highly interconnected forces that characterise the farming SES.

To that end we harness two resources – resilience thinking and law – to forge a fresh inter-disciplinary and contextualised approach to support transformation of the English farming system[5] post-Brexit by moving away from the current sustainable intensification paradigm to a more agroecological set of values and processes. Accordingly, in this article we first set out the gap that exists between the Government's priorities and an alternative approach to sustainable farming based on agroecological practices. In section 3 we explain the relevance of resilience thinking to help better understand the interrelationships and processes of an SES such as farming and thus provide a benchmark against which to evaluate reform. Any SES faces critical resilience thresholds or tipping points, so section 4

[2] DEFRA, *Health and Harmony: the Future for Food, Farming and the Environment in a Green Brexit* (Green Paper, Cm 9577, February 2018)

[3] Agriculture Bill, published 12 September 2018, https://publications.parliament.uk/pa/bills/cbill/2017-2019/0266/18266.pdf . Publication came too late for detailed analysis here. However, the Bill substantively adopts the approach of the CP.

[4] DEFRA 2018 (n2) Executive Summary paras 14-17

[5] The devolved arrangements for agriculture in the UK are set out in the Agriculture Bill Explanatory Notes, Annex A: https://publications.parliament.uk/pa/bills/cbill/2017-2019/0266/en/18266en.pdf accessed 7 October 2018

explores key sites of struggle for the future of farming – cultural identity, connection with land and security. Failure to address these may not just be ecologically damaging but irreversible. Averting or confronting tipping points requires capacity building in systems. We therefore use section 5 to suggest resilience-led governance measures to prepare, navigate and secure a transformation that enhances the role of sustainable agroecological practices.

2. Challenging the hegemony of sustainable intensification

Farming is understood to mean the growing of food and fuel and farmers are defined as anyone who uses land for this purpose as part of a commercial undertaking. The farming system is the framework for interactions between human and land for the purpose of growing but not wider food related issues such as demand, distribution, public health and waste. Whilst integrated farming and food policies will be necessary for sustainability,[6] the farming system as defined here is characterised by the direct and intertwined relationship between human and non-human nature.

Farming policy must address the twin challenges of being more ecologically sustainable whilst ensuring food security. Hitherto, government policy has focused on sustainable intensification.[7] Admittedly, this could represent a strong sustainability agenda emphasising ecological priorities and practices.[8] However, sustainable intensification may also invite short-term efficiency-led priorities which rely heavily on the promise of new technologies. But doing so disguises the fact that land is a finite resource, maintains a 'cheap food' ideology and distracts from discussion of biodiversity, social, and ethical concerns. Certainly, evidence suggests that the intensification of agriculture has had 'an

[6] IPES-Food (n 8); Tim Lang and others, *A Food Brexit: Time to Get Real* (City University, University of Sussex, Cardiff University 2017)

[7] Eg funding the Sustainable Intensification Research Platform <www.siplatform.org.uk> accessed 8 June 2018

[8] Nic Lampkin and others, 'The Role of Agroecology in Sustainable Intensification Report for the Land Use Policy Group' (Organic Research Centre, Elm Farm and Game & Wildlife Conservation Trust 2015), ix

overwhelmingly negative' impact on soils, water and biodiversity and could do more to mitigate and adapt to climate change.[9] As a recent international study concluded, 'industrial agriculture does not and cannot reconcile the multiple concerns of sustainable food systems. Food and farming systems can be reformed, but only by moving away from an industrial orientation and organization.'[10]

Agroecology is an alternative paradigm to sustainable intensification with a pivotal contribution to make in addressing these tensions.[11] It provides a holistic approach to food production which integrates social, ecological and economic considerations, differentiating it from other approaches to sustainable agriculture.[12] Agroecological farming works with natural processes to promote sustainable food production appropriate to local contexts whilst maintaining genetic and cultural diversity.[13] It highlights practices such as integrated arable and livestock husbandry, soil improvement through crop management and biological control of pests and disease rather than high artificial inputs and pesticide use.[14] Evidence indicates many benefits including biodiversity, improved soil and water quality,

[9] Daniel Hayhow and others, '*State of Nature 2016'*, 12 (The State of Nature Partnership 2016)

[10] IPES-Food, *'From Uniformity to Diversity: a Paradigm Shift from Industrial Agriculture to Diversified Agroecological Systems'* (International Panel of Experts on Sustainable Food systems 2016) www.ipes-food.org accessed 8 June 2018

[11] Food and Agriculture Organisation, '*Report of the Regional Symposium on Agroecology for Sustainable Agriculture and Food Systems for Europe and Central Asia'* (FAO 2017) 38

[12] Food and Agriculture Organisation, *'Catalysing dialogue and cooperation to scale up agroecology Outcomes of the FAO regional seminars on agroecology. Summary'* (FAO 2018) 3

[13] Miguel Altieri, 'Linking Ecologists and Traditional Farmers in the Search for Sustainable Agriculture' (2004) 2 Frontiers in Ecology and the Environment 35

[14] Fabio Caporali, 'History and Development of Agroecology and Theory of Agroecosystems' in Massimo Monteduro and others, *Law and Agroecology: A Transdisciplinary Dialogue* (Springer 2015) 15

pollinator health, climate change mitigation and adaptation,[15] as well as more nutritious and better-targeted food production than intensive, conventional farming.[16] However, an agroecological approach to farming is about more than minor adjustments and technical solutions. It is a long term, dynamic transition which places human and non-human nature at the core of food production and prioritises the more economically or socially vulnerable to promote diversity and equity. [17] As such, agroecology is a broader and more contested concept than 'organic' or 'biodynamic' farming'. Depending on the context, those methods may reflect good agroecological practice but do not encompass the full range of objectives. In essence, agroecology demands policies which support farmers – particularly younger and smaller-scale – to produce food in harmony with nature, drawing on traditional practices in combination with modern science, sharing experience and responsibilities with other farmers to create a co-operative, landscape-scale approach to food production.[18]

Seen against this background, the Government's proposals may be unduly optimistic in claiming 'a more rational, and sensitive agriculture policy which promotes environmental enhancement, supports profitable food production and contributes to a healthier society'.[19] In the run-up to the CP, the Defra Secretary declared that 'there is no inherent tension between productive farming and care for the natural world'.[20] The CP follows the Government's industrial strategy[21] and 25-year Environment Plan

[15] FAO 2018 (n 12) 8-10

[16] Ibid.

[17] FAO 2018 (n 12) 4

[18] Ibid. Ch 1,3

[19] DEFRA 2018 (n 2) Foreword

[20] Michael Gove, <www.gov.uk/government/speeches/farming-for-the-next-generation> 5 January 2018 accessed 4 June 2018

[21] Department for Business, Energy and Industrial Strategy, *Industrial Strategy: Building a Britain Fit for the Future* (White Paper, Cm 9528, 2018)

('EP'),[22] which purportedly form complementary and mutually reinforcing approaches to the economy and environment. The crucial connection between economic growth and environmental sustainability is the use of natural capital valuation as a methodological and decision-making tool. By giving the environment due regard as a natural asset and contributor to the economy, we are 'more likely to give it the value it deserves to protect and enhance it'.[23] However, the critical assumption is that we need to measure only what good the environment does for humans. Whilst the EP admits that not everything can be 'robustly' valued at present and that valuation is a tool rather than final arbiter of policy decisions, the natural capital approach could easily reinforce a highly efficiency-led construction of farming.[24]

Challenging the sustainable intensification paradigm may become even more difficult given that changes in domestic agriculture cannot be isolated from the wider context of international trade settlements post-Brexit. The CP advocates a more self-reliant and internationally competitive farming industry. Yet, as recent reports consistently indicate,[25] future markets are uncertain and any bilateral trade deals agreed by the UK may radically impact upon competitiveness, lawful technologies and farming practices. The UK's strategy for international trade – whether a race to the 'top' based on niche markets and quality standards or 'bottom' driven by low consumer prices – will have huge consequences for farming and environmental policies.

[22] DEFRA (n1)

[23] Ibid. 19

[24] Ibid. 20

[25] Agriculture and Horticulture Development Board, *Brexit Scenarios: an Impact Assessment* (AHDB 2017); Resolution Foundation, *Changing Lanes – The Impact of Different Post-Brexit Trading Policies on the Cost of Living* (Resolution Foundation 2017)

Any paradigm shift is thus clearly difficult and conditional on many eventualities. To understand the processes and stress points of transformation, we turn to resilience thinking as a way of better targeting reform interventions.

3. **Resilience thinking: processes of transformation**

Resilience is a concept used across many disciplines, but still underplayed in legal analysis. Whilst there is no single resilience paradigm, there is emerging convergence around social ecological resilience as a primary lens.[26] We canvass a resilience framework that develops a better understanding of farming policies and their consequences against the over-arching goal of sustainable agriculture. Resilience and sustainability are often connected, theoretically and politically, but we understand sustainability to refer to outcomes over long time-scales, whereas resilience prioritises processes and preparedness.[27] Thus, resilience thinking is not a prescription for getting from A to B, it is more about understanding how the layers and actors of a system interact and what capacities exist, or might be established, to deal with disturbances. The special value of resilience to farming is to provide a more realistic, appraisal of connections that drive the dynamics of a system characterised by uncertainty and never-ending change.

As such, resilience thinking fits within a broader theoretical understanding of human and non-human life as a complex system marked by non-linearity and relationality. Complex systems are not reducible to the sum of their parts, such that an adjustment to one part of the system causes a predictable and proportionate outcome elsewhere. By a continuing process of interaction with – and feedback from –

[26] Julie Davidson and others, 'Interrogating Resilience Toward a Typology to Improve its Operationalization' (2016) 21 Ecology and Society 27 (identifying four other typologies of engineering, community, disaster and urban resilience).

[27] Dayton Marchese and others, 'Resilience and Sustainability: Similarities and Differences in Environmental Management Applications' (2018) Science of the Total Environment 613, 1275-1283

its constituent parts and surroundings it is always actively 'becoming' rather than being 'passively subject to the timeless laws of mechanical physics'.[28] This means that interactions between variables are unpredictable with no expectation of a linear relationship between inputs and outputs.[29] However, unlike chaos theory, complexity does not render a system ungovernable. But, in contemplating policy interventions in an SES, resilience requires acceptance that human and non-human nature are fundamentally interdependent,[30] not two separate or merely balanced considerations. For some philosophers solidarity with non-humans is central to ecological understanding.[31] To discuss governance of non-human ecosystems without consideration of the relationship between those ecosystems and human activity ignores the reality of scientific, emotional and spiritual connections.[32] Accordingly, resilience takes the relational character of these dynamic interactions as vital to understanding the context-specific processes of systemic change.[33] The connectivity between social and ecological becomes a focal point for understanding these transformative processes.

[28] David Chandler, *Resilience – the Governance of Complexity* (Routledge 2014) 23

[29] Ibid 22

[30] Carl Folke and others, 'Resilience Thinking: Integrating Resilience, Adaptability and Transformability' (2010) 15 Ecology and Society 20

[31] Timothy Morton, *Being Ecological* (Pelican 2018).

[32] Agatha Herman, 'Enchanting Resilience: Relations of Care and People- Place Connections in Agriculture' (2015) 42 Journal of Rural Studies 102; Helena Howe, 'Making Wild Law Work – the Role of 'Connection with Nature' and Education in Developing an Ecocentric Property Law' (2017) 29 JEL 19

[33] Ika Darnhofer and others, 'The Resilience of Family Farms: Towards a Relational Approach' (2016) 44 Journal of Rural Studies 111

Constructions of resilience can be traced to whether a system can recover from a shock without changing its basic structure, function and identity.[34] However, resilience does not just capture the ability of a system to 'bounce-back' or *persist* in the same state. It also incorporates the capacity to self-organise and *adapt* whilst staying within critical boundaries and not unintentionally shifting into a qualitatively different state.[35] But for our purposes the value of resilience is to focus on how a system can 'bounce-forward', in other words *transform* into a new (here, more sustainable) state.[36] More specifically, transformability is the capacity to cross thresholds into a new development trajectory.[37] Deliberate transformation treats a crisis – such as Brexit – as an opportunity to navigate paths to a new SES. For farming, this allows fundamental reappraisal of the priority to be attached to intensification or agro-ecological methods. But deliberate transformations can only emerge from the interactions of individuals, communities and societies, and through their interplay with the biosphere within and across scales.[38]

Thresholds are key to the relationship between resilience and sustainability. At first sight, resilience is a neutral concept; even dysfunctional systems can be resilient by persisting over time and being hard to alter. Farming may be resilient if it persists through Brexit by becoming less environmentally friendly and losing smaller farms to larger ones. Where resilience thinking contributes to sustainability, however, is by recognising key system variables that would bring about irretrievable environmental

[34] C.S. Holling, 'Resilience and Stability of Ecological Systems' (1973) 4 *Annual Review of Ecology and Systematics* 1; B. Walker and D. Salt, *Resilience Thinking Sustaining Ecosystems and People in a Changing World* (Island Press 2006)

[35] Elena Bennett and others, 'Toward a More Resilient Agriculture' (2014) 5 The Solutions Journal 65

[36] Ika Darnhofer, 'Resilience and Why it Matters for Farm Management' (2014) 41 European Review of Agricultural Economics 461, 466; Folke (n 30)

[37] Folke (n 30)

[38] Carl Folke, 'Resilience' (republished) (2016) 21 Ecology and Society 44

or societal harm. Resilience is not a state of affairs or outcome. It is instead an ongoing *process* to support the conditions which will enable innovation and pathways to 'good' adaptations or transformations, here meaning more sustainable.[39]

The importance of social thresholds has hitherto been understated.[40] Taking this further, it is our contention that more attention should be paid to critical variables that *connect* the social and ecological. For example, the cultural question of what farming means may reach a tipping point around the numbers of farmers who understand or care about their land and the impact of their actions on the environment, or who have the inclination to reflect upon their practices. Matters such as identity and security – even motivation and anxiety – are threshold factors to be taken into account when considering systemic disturbance. Poverty, unsurprisingly, is a low-resilience predicament.[41] Understanding thresholds needs a genuinely interdisciplinary evidence base to acknowledge social trends and cultural phenomena as much as soil conditions, climatic impact or habitat degradation.[42]

Awareness of critical thresholds allows policy-makers to build and manage a system's transformative capacity. Resilience entails a range of principles, such as diversity, flexibility and scale. For example, capacity is increased where functional diversity is present in the farming practices and systems used, farm size, landscape type and crops sown.[43] Genetic diversity in crops grown and knowledge of different approaches to planting for pests or tilling for soil conservation increase the range of

[39] Folke (n 30)

[40] Davidson (n 26); Herman (n 32); Katrina Sinclair and others, 'Can Resilience Thinking Provide Useful Insights for those Examining Efforts to Transform Contemporary Agriculture?' (2014) 31 Agric Hum Values 371

[41] Markus Promberger, 'Resilience Among Vulnerable Households in Europe' (IAB Discussion Paper 2017) <http://doku.iab.de/discussionpapers/2017/dp1217.pdf> accessed 8 June 2018

[42] Herman (n 32); Darnhofer (n 33)

[43] Bennett (n 35)

innovative solutions to challenges such as climate change.[44] Socially speaking, a diverse range of actors and institutions across learning, innovation and feedback is more likely to enable change. Taking account of different cultural values and knowledge facilitates more effective, context-specific, policy interventions than rationalist, abstract, top-down approaches.[45] Similarly, resilience suggests power shared by a range of actors, organisations and networks rather than just vested in state government.[46] This is not just a matter of diversity for its own sake but an appreciation that local communities are more likely to understand the realities of systemic complexities and should accordingly be politically empowered.[47] Moreover, without diverse people and interests there will be little disturbance of existing hierarchies and established management approaches. The principle of flexibility requires policy, law or regulation to assimilate the feedback generated through innovations, experiments and monitoring and to adjust in response. That flexibility accommodates temporal and spatial dimensions and operates at the most appropriate scale.

Perhaps the biggest obstacle to 'successful' forward thinking is lack of knowledge about the behaviour of ecosystems, human social systems and the relationship between them.[48] Resilience requires a framework integrating learning into the process of managing the system, feeding results back for evidence-based decision-making.[49] Incorporating the learning of actors on the ground who are

[44] Altieri (n 13)

[45] Chandler (n 28) 39-52

[46] Tracy-Lynn Humby, 'Law and Resilience: Mapping the Literature' (2014) 4 Seattle Journal of Environmental Law 85, 97

[47] Chandler (n28), 41

[48] Holling (n 34)

[49] Folke (n 30); Ahjond Garmestani and Craig Allen (eds) *Social-Ecological Resilience and the Law* (Columbia University Press 2014)

learning-by-doing is particularly vital.[50] This applies both to current innovation and experimentation as well as traditional, even highly localised, embodied approaches to management of an SES. There are no universal solutions and context-specific, tried-and-tested, local adaptations may often be most effective.[51] Managed experimentation where it is 'safe to fail' reduces the risk of environmentally or socially undesirable outcomes affecting the fundamental functioning of the rest of the system.[52] Governance measures should recognise different phases of transformation, from preparation and navigation of change to building post-transformation resilience.[53]

4. Sites of struggle: cultural identity, connection and security thresholds

For resilience purposes, farming can be conceptualised as an SES. It may not follow more usual SES typologies which explore a particular ecosystem – a wetland or a forest for instance – in light of the complex interactions between its ecological and social aspects. Farming is a more multi-dimensional system which weaves together concerns for a range of ecosystems with a wide array of human-related interests and structures which comprise the 'social'. There are multiple ecosystems at issue relating to soil, water, flora and fauna which impact across a variety of scales – farm level, landscape, regional, national and beyond. Similarly, viewed as one SES, farming comprises a multi-scale array of social systems from individual farms, through civil society organisations interested in food and fuel production, to institutions and policymakers responsible for the frameworks in which farming takes place. The social and the ecological are entwined through the ongoing need to ensure that the land can supply the food and fuel needed for a growing population.

[50] Humby (n 46) 96; Chandler (n 28) 41-42

[51] Chandler (n 28) 52

[52] Garmestani (n 49) 370-371

[53] Per Olsson and others, 'Sustainability Transformations: a Resilience Perspective' (2014) 19 Ecology and Society 1

We discuss cultural identity, connection to land and security as sites of struggle or, in resilience terms, pivotal thresholds for the direction of travel of the farming SES post-Brexit. They are central for any capacity-building strategy to support a transformative policy shift that challenges the hegemony of sustainable intensification. Although these sites of struggle are discussed separately below, they are highly interconnected, so that interventions in one may significantly affect others. All three relate to the social-ecological interdependency pivotal to the farming system. Cultural identity and connection reflect different relationships. The former largely concerns peer group relations or externalities in terms of what a farmer 'should' be doing, whereas connection refers to farmers' subjective relationships with (and subsequent behaviour towards) their land. Security is a factor capable of trumping the commitment to ecological attitudes which identity and connection might otherwise encourage. Brexit is undoubtedly a major threat to farmers' financial security.[54] Yet, in a rare explicit reference to resilience, the Government's CP declares that '[t]he best way of improving resilience … is to support increases in farm productivity'. This not only limits resilience to food security but in so doing potentially undermines the green credentials of reform by seemingly favouring productivist values. Brexit's impact upon cultural identity and connection may be more indirect but just as significant if its effect upon farming is most detrimental for those practices and farms which are more likely to adopt sustainable agro-ecological behaviours.

4.1 Cultural identity

A critical question linking social and ecological aspects of farming is how farmers identify themselves and their function(s) and how they respond personally and collectively to change. Put simply, what farmers believe in, worry about or feel secure in doing will affect how they farm their land. Often grouped under the umbrella terms of 'social capital' and 'social memory';[55] cultural factors include

[54] AHDB (n 25); Resolution Foundation (n 25)

[55] Garmestani (n 49) 372; Humby (n 46) 98

feelings of agency, trust, the extent and nature of social networks, alongside common rules, norms and values found amongst actors or communities as well as the store of knowledge and practice held by those actors.[56] If transformation is to be supported then ways of reframing the cultural identity of farmers and farming must be found. This means addressing the conceptualisation of the 'good farmer', an idea so widespread that it is helpful to invoke research and experiments from other agricultural regimes when considering the English system.

Hitherto, the prevalent standard of the 'good farmer' connotes a food producer rather than someone primarily concerned about the ecological capacities of the land farmed. This extends to regulatory assumptions about the farmer as a competitive business manager who employs conventional methods.[57] Although by no means universal,[58] such a shared cultural identity is hard to disturb and, as a result, the self-identity of many conventional farmers has been a barrier to their willingness to adopt environmentally-friendly practices.[59] Thus, farming land 'tidily' by neat ploughing and hedge-cutting is perceived as more valuable than other practices, such as no-till agriculture, which reduce soil-erosion but do not conform to the behaviour of a 'good farmer' because the result looks extremely untidy. Decisions to do something 'different' may well impact adversely personally as well as in relation to professional standing.[60] In addition, farming remains male-dominated where barriers to

[56] Humby (n 46) 98

[57] Christopher Rodgers, 'Reforming Land Tenure: Farm Business Tenancies and the Rural Economy' (1996) Conv 164

[58] Jane Mills and others, 'Engaging Farmers in Environmental Management Through a Better Understanding of Behaviour' (2017) 34 Agric Hum Values 283

[59] Rob Burton and others, 'Exploring Farmers' Cultural Resistance to Voluntary Agri-environmental Schemes' (2008) 48 Soc. Ruralis 16

[60] Agatha Herman and others, 'Placing Resilience in Context: Investigating the Changing Experiences of Finnish Organic Farmers' (2018) 58 Journal of Rural Studies 112

women are manifested in choices of technologies, decision-making arrangements, diversification strategies and even the physical design and operation of farms.[61] The 'good farmer' standard – as a source of values and legitimacy for farming practices – is thus a site of struggle[62] for any process transforming the goals, priorities and practices of farming. Put another way, there are at least three farmer roles likely to be in tension: as producer, owner and citizen,[63] with the latter also understood as steward or guardian. But those roles are not fixed, the reality of identity consisting in 'doing'.[64] In resilience terms, a key question is whether those roles can be 'managed' alongside sustainable intensification,[65] or whether a radical transformation is required for the purposes of 'better' sustainability that cannot just be a matter of balancing roles within multifunctionality.

The processes and agents for re-imagining the 'good farmer' are many-layered and complex. Research from Sweden[66] suggests factors are institutional (CAP's greening provisions and organic standard setting), market (growing demand for organic produce) and ethical (public concern over animal welfare and environmental protection). A study in England concluded that farmers' willingness to engage in environmental activities was affected at different levels ranging from individual beliefs and

[61] Sally Shortall and others, *Women in Farming and the Agricultural Sector Final Report for the Environment and Forestry Directorate* (Scottish Government 2017)

[62] Fred Saunders, 'Complex Shades of Green: Gradually Changing Notions of the 'Good Farmer' in a Swedish Context' (2016) 56 Sociologia Ruralis 391

[63] Jorgen Primdahl and Lone Kristensen, 'The Farmer as Landscape Manager: Management Roles and Change Patterns in a Danish Region' (2011) 111 Geografisk Tidsskrift – Danish Journal of Geography 107

[64] Sophie Wynne-Jones, 'Understanding Farmer Co-operation: Exploring Practices of Social Relatedness and Emergent Effects' (2017) 53 Journal of Rural Studies 259

[65] Mills (n 58)

[66] Saunders (n 62)

values to community and societal norms.[67] Belgian social pyschology research also suggests that farmers' moral norms and self-identity shape the extent of their motivations to take care of biodiversity.[68] In sum, the remoulding of what it takes to be a good farmer is the product of an ongoing iteration with social and cultural contexts.[69] Moreover, it is this internalized reconceptualization of the 'good farmer' over time that is the critical element in bringing about changes in behaviour on a sustainable footing, rather than the more limited effects of external drivers such as financial support and incentives.[70]

Thus, for resilience purposes, the process of transforming the self-identity of farmers may unlock and navigate a more sustainable, scale-led approach to agricultural practices. In particular, measures to remodel the notion of the 'good farmer' – if conducted along resilient lines of co-production of knowledge and understanding – can be a bridge between the small scale of the field/farm to the larger scale of landscape.[71] As noted in a Welsh farming cooperative study, habitat work may be undertaken jointly which would not have been embarked upon as individuals.[72] Agreement about types of action (tree planting, destocking etc) can be made collectively, with individual farms still deciding about particular levels or intensity of action suitable for their undertaking. Shifting the focus to landscape

[67] Mills (n 58)

[68] Erwin Wauters and others, 'The Social Psychology of Biodiversity Conservation in Agriculture' (2017) 60 Journal of Environmental Planning and Management 1464

[69] Lee-Ann Sutherland and Ika Darnhofer 'Of Organic Farmers and 'Good Farmers': Changing Habitus in Rural England' (2010) 28 Journal of Rural Studies 232

[70] Mills (n 58); Wauters (n 68)

[71] Thanasis Kizos and Lone Kristensen, 'The 'Good Farmer': Studies of Farm Management Practices and Landscape Change' (2011) 111 Geografisk Tidsskrift – Danish Journal of Geography 105

[72] Wynne-Jones (n 64)

level could prove a more appropriate basis of future funding schemes.[73] Institutional factors that contribute to the persistence of the good farmer identity also need addressing. As discussed further in s.4.3, agricultural tenancy law and policies governing access to land for new entrants may also hinder sustainable transitions. The CP's shift to 'public money for public goods' is not of itself enough to secure a transformation in identity. Rather, the key point is for farmers to become legitimised in prioritising, should they choose, practices that are ecologically appropriate for their land. Put another way, resilience capacity demands that the Government's preference for sustainable intensification is thrown open to contestation with the possibility of alternative, peer-supported, local solutions.

4.2 Connection to land

The people-place connection commands particular attention because it is associated with an ethic of care which correlates positively with a willingness to act as a steward of land, with responsibility both to that land and wider society.[74] Further, at a deeper and more personal level, individuals need motivation, knowledge and skills to change their behaviour and act in more environmentally friendly ways. Having a sense of interdependence and emotional attachment to land contained in the notion of connection with nature strongly provides that motivation.[75] For Herman this is best captured through the concept of 'enchantment', which expresses an individual's personal and embodied relationship with a place arising through interaction and intimacy with the land of the kind experienced by many farmers.[76] More broadly, literature across various disciplines suggests that connection *with* non-human nature is primarily acquired through experiences *in* nature, particularly

[73] House of Commons Environmental Audit Committee, *The Future of the Natural Environment after the EU Referendum* (HC 599, 4 Jan 2017)

[74] Herman (n 32)

[75] Ibid

[76] Ibid

when younger.[77] This fundamental connection through feeling serves to underline further the lack of separation between the social and the ecological. A key resilience threshold is thus likely to be encountered as mental disconnection between humans and the biosphere continues.[78] Despite its 'health and harmony' tag, the production-oriented CP is conspicuously free of references to this connection. Indeed, 'engagement with the natural environment' is linked only to conservation of natural beauty and to exercise or recreational activities for the general public.[79] Reinforced by its dependency on natural capital valuation, the CP shows a worrying lack of concern for connection to land among farmers. In this sense, the land itself can be seen as an actor in the understanding and management of land use and farm practices. As Graham has noted, the 'de-physicalisation' of land holds significant risks for how property law is conceptualised and regulated.[80] Whilst lack of connection does not automatically entail a lack of care, the relational approach advocated in resilience thinking invites a closer and more localised understanding of conditions and solutions to problems.

Soil degradation provides a specific illustration of the impact connection (or lack of it) can make on farming decisions and resilience. Modern agricultural practices are widely seen as largely responsible for the loss of this natural capital,[81] with the annual cost of soil degradation in England and Wales put at £1.2bn.[82] The predictions are dire – according to the independent Committee on Climate Change '[s]ome of the most productive agricultural land in England is at risk of becoming unprofitable within

[77] Howe (n 32) 43

[78] Benjamin Cooke and others, 'Dwelling in the Biosphere: Exploring an Embodied Human-Environment Connection in Resilience Thinking' (2016) 11 Sustain Sci 831, 834

[79] DEFRA (n 2) 33

[80] Nicole Graham, *Lawscape: Property, Environment, Law* (Routledge 2011)

[81] House of Commons Environmental Audit Committee (EAC), *Soil Health* (HC 180, May 2016)

[82] Farmers Weekly, 2 February 2018, 17

a generation due to soil erosion and the loss of organic carbon'.[83] In resilience terms, therefore, the scientific evidence appears to be screaming the dangers of approaching critical thresholds. However, consensus about the threat has not yet been matched in terms of response. A study based on farming in the South Downs National Park concluded that behaviours can be divided into passive and active.[84] On the one hand, farmers motivated more by questions of financial security would only act in relation to their soil where there was a risk of losing financial incentives. On the other, if environmental values were at the forefront of the farmers' motivations there was greater likelihood of more active, pre-emptive changes in practices. However, in that study only a minority of farmers were driven by such conservation values. These findings suggest that policy interventions to secure real and durable transformations cannot be based on financial incentives alone. Voluntary activity seems hugely important to the development of improved soil management and other sustainable farming practices.[85] Understanding land and being connected to it are part of the navigation of changing patterns of relations that is central to capacity-building.[86] However, the CP, whilst citing soil health first on its list of 'public goods', has already been criticised for its lack of detail about implementing strategy. In contrast, the Sustainable Soils Alliance has called for an integrated 8-point soil action plan to be underpinned by statute.[87]

[83] Committee on Climate Change, *Progress in Preparing for Climate Change: 2015 Report to Parliament*

[84] John Boardman and others, 'Understanding the Influence of Farmer Motivations on Changes to Soil Erosion Risk on Sites of Former Serious Erosion in the South Downs National Park UK' (2017) 60 Land Use Policy 298, 298

[85] Campaign for the Farmed Environment, 2017 survey results; http://www.cfeonline.org.uk/news/2017-survey-results/

[86] Darnhofer (n 33) 117

[87] Sustainable Soils Alliance, *Call for Action*, 2018 < https://sustainablesoils.org/8-soil-policy-asks/> accessed 8 June 2018

The kind of caring, knowledgeable relationship with land characterised by the idea of affective connection or enchantment has a significant temporal dimension; farmers need time to develop the connection which can motivate and enable them to engage in effective behaviours for sustainability. Not only do dominant property norms fail to reflect the significance of such a relationship,[88] but certain specific property rules may well work against transformation of farming. We discuss appropriate responses in section 5.

4.3 Security

Security – or, more pertinently, insecurity – takes myriad forms, including financial, physical and mental vulnerabilities that affect a farmer's perceptions, decision-making and conduct. Disturbances to security will have both systemic and individual effects, with extreme impacts manifested in bankruptcies, exits from the industry or even suicide. Indeed, farming persistently ranks as one of the highest suicide risk occupations, at least for men.[89] The joined-up thinking required for resilience understands social aspects of farming – such as identity and connection – to be just as integral to personal security as financial concerns. All the more so since Government surveys indicate that farmers are not only motivated by profit maximization.[90]

Financially, English farming presents a mixed picture, with 16% of farms making losses in 2014-2017. Incomes vary across sectors, with poultry farms the most profitable in this period and grazing livestock and mixed farms the least. Financial security is a driver for diversification, with almost two-thirds of farms in 2016-17 using farm resources to deliver non-agricultural activities that yielded profits across

[88] Graham (n 80); Peter D. Burdon, *Earth Jurisprudence, Private Property and the Environment* (Routledge 2015)

[89] Office for National Statistics, *Suicide by occupation, England: 2011 to 2015*, 2017 < https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/suicidebyoccupation/england2011to2015#suicide-by-occupation-among-males> accessed 8 June 2018

[90] DEFRA, *The Future Farming and Environment Evidence Compendium* (DEFRA, February 2018)

all groups of farms.[91] In the worst-case scenario, threats to livelihoods rupture the critical connection between social and ecological altogether, rendering security a key site of struggle. Yet, if an environmentally-aware farmer exits the industry it does not automatically follow that the land becomes a housing development or a desert ravaged by over-intense farming methods. Resilience must thus accommodate a range of variables around financial shocks – such as the effect on land prices and availability, the opportunities for new, possibly more innovative or entrepreneurial, entrants to farming, or the reorientation of existing farming practices and technologies. As resilience does not pre-ordain outcomes, possibilities such as abandonment of land and rewilding could prove ecologically positive responses to replace previous farming activity in some areas.

Brexit will almost certainly have significant financial consequences whatever the eventual nature of the UK's trade relationship with the EU and the rest of the world. With around 60% of farm incomes currently coming from basic EU payments,[92] exit from the CAP leaves a financial gap. Recent reports that have modelled post-Brexit outcomes point to different impacts across sectors. For example, cereals and upland beef and sheep producers account for a large share of producers and land use. According to the AHDB, it is these producers who, on average, will be most severely affected by drops in farm business income. Indeed, on the 'Fortress UK' or 'no-deal' scenario (ie based on WTO rules), those sectors would see their average farm become loss-making.[93] Different factors, such as increased labour costs from the loss of migrant labour, are potentially critical for other sectors such as horticulture.

[91] Ibid

[92] Ibid

[93] AHDB (n 25)

From a resilience perspective, large-scale financial harm puts the critical social-ecological relationship at considerable risk. Agricultural regimes generally fall into one of four categories[94]: sectoral protection (eg Norway, Switzerland), decoupled subsidies (eg the CAP), insurance (eg USA and Canada) or market-oriented (eg New Zealand and Australia) schemes. The greater the dissonance between agricultural objectives and sustainability goals, the more likely the disturbance to the very structure of the farming SES. Recent analysis for Chatham House, for example, advocates a post-Brexit market model for the UK whilst acknowledging the significant impact upon farm businesses.[95] On this view, the benefits of 'lower prices for consumers, ensured food security through diversified trade, and a rise in the sector's productivity…potentially outweigh those of preserving any particular form of farming system'. This market approach also claims that the costs of such restructuring can be exaggerated and that farmers exiting the industry will be deployed elsewhere in the economy. But, we would argue, in what sense does that – even if true – assist the sustainability of the farming SES? Put another way, a policy shift to prioritising the market fails to recognise the tipping points that we have been discussing as pivotal to the system. Even with the transitional period set out in the Bill,[96] wider Brexit negotiations might radically rewrite market conditions and exacerbate factors affecting the structure of a farming SES vulnerable to global pricing and fluctuations in supply.[97]

Structural diversity of farms, farmers and practices promotes the capacity of the farming SES to respond appropriately to changing environmental, economic and social pressures. Ensuring diversity in the species of crops or animals husbanded, as well as methods of growing provides greater flexibility

[94] Ian Mitchell, *The Implications of Brexit for UK, EU and Global Agricultural Reform in the Next Decade* (The Royal Institute of International Affairs 2017)

[95] Ibid

[96] Agriculture Bill (n 3) s5 provides for 7 years in England starting in 2021, extendable by regulations.

[97] House of Lords EU Energy and Environment Sub-committee, Oral Evidence 7 Feb 2017

to achieve sustainable food production and adapt to challenges such as climate change.[98] Diversity of farm size and type is similarly valuable. In contrast to larger ones, smaller farms may be less likely to produce high volumes of food efficiently. They may also struggle more to make use of economies of scale and to maintain financial security with reduced options for diversification and fewer resources to invest in new technologies. However, these farms are more likely to employ agro-ecological practices with lower chemical inputs or heavy machinery use, which directly benefit ecosystems.[99] Smaller farms may also provide better opportunities for connection and 'enchantment' of the farmer with the land which, in turn, incentivises its future care.[100] They are also likely to employ more people and produce and sell more local varieties of food[101] and to employ more women, who are underrepresented in farming.[102] Yet small farms are already in decline in England with one recent report suggesting that few if any farms under 20 hectares could be left within a generation and most of those up to 50 hectares also gone in two generations.[103] This loss of farm diversity has hitherto been met by 'deafening silence' among institutions and policy-makers.[104] Worryingly, the CP fails to acknowledge the contribution of small farms to a 'green' policy. Rather, their discussion is diffused

[98] Altieri (n 13)

[99] CPRE, *Food and Farming Foresight Paper 2, Uncertain Harvest* (CPRE 2017); Rebecca Laughton, *A Matter of Scale: A Study of the Productivity, Financial Viability and Multifunctional Benefits of Small Farms (20 ha and Less)'*(Landworkers Alliance and Centre for Agroecology, Coventry University 2017)

[100] Herman (n32)

[101] Michael Winter and Matt Lobley, *Is There a Future for the Small Family Farm in the UK? Report to The Prince's Countryside Fund* (Prince's Countryside Fund 2016)

[102] DEFRA, *'Farm Structure Survey: Focus on Agricultural Labour in England and the United Kingdom'* (DEFRA, 2015)

[103] CPRE (n99)

[104] Ibid.

across rural communities, landscape heritage and problems of digital connectivity. In our view, this is another opportunity missed, as allowing small farms to flourish must be part of any transformative path for farming.

The CP similarly fails to address another key issue of security: tenure and access to land. This is currently a major challenge for the farming SES in England where land prices are very high.[105] Leasing land could provide a way in for new entrants and others who are unable to purchase land, but tenancies too are hard to find, often with high rents and very short terms.[106] Unfortunately, successive government policies have exacerbated problems in several ways. For example, security of tenure for tenants of farmland was substantially reduced by the Agricultural Tenancies Act 1995 from potentially three generations (under the Agricultural Holdings Act 1986) to four and a half years on average.[107] Despite one aim of the 1995 Act being to encourage landowners to make more land available by reducing security of tenure, it does not appear to have succeeded.[108] Likewise, cuts in local council funding have contributed to large scale reduction in the availability of council-owned farms as land is

[105] DEFRA (n 90) 38

[106] Tenant Farmers' Association, 'TFA Calls on the Chancellor to Use Fiscal Levers to Achieve Longer Term Farm Tenancies' (May 2017) http://www.tfa.org.uk/tfa-media-release-1705-tfa-calls-on-the-chancellor-to-use-fiscal-levers-to-achieve-longer-term-farm-tenancies/ accessed 9 June 2018; https://www.fginsight.com/news/news/demand-for-farmland-driving-up-rents190215-1536 accessed 12 August 2018

[107] Farmers Weekly, 27 June 2017 (citing Central Association of Agricultural Valuers survey) <https://www.fwi.co.uk/business/survey-points-rise-length-farm-tenancies> accessed 8 June 2018

[108] TFA (n 106)

sold to fund shortfalls for essential services. At the same time farmers are retiring later and holding onto land that in previous generations would have become available much sooner.[109]

Having farming land available which is not prohibitively costly or short-term is a key requirement of transition to an agroecological SES because it enables a diverse range of entrants and enables long-term sustainable thinking. Lack of available land at affordable prices has adverse implications for the diversity of the farming population and existing imbalances in age, gender and ethnicity, as well as cultural perspectives and values. As difficulty accessing land disproportionately impacts younger farmers seeking entry to the industry, it also risks severely damaging the farmer-land relationship because age appears a relevant feature in developing emotional connection with non-human nature. Loss of security of tenure impacts security more generally and creates greater pressure to build a profitable enterprise quickly – especially where there is significant debt – regardless of longer term ecological considerations.[110]

At a more individual level, security is a key issue for farmers' ability to pursue innovative farming practices or business diversifications which enhance the social-ecological relationship. Where farmers are uncertain about markets and income streams they are less likely to entertain further uncertainty by taking risks for a goal the benefits of which are long-term and may not be the most culturally valued, especially where these risks could further threaten the present viability of the farm by reducing yields or undermining relationships with distributors, family or neighbours. Similarly, diversification strategies which may make the farm more financially secure in the long run but require investment in the short term, may be impacted by feelings of insecurity. Even experiments at a minor level – with new leys, breeds or rotations for instance – are less likely when a farmer is worried about the future

[109] Elise Wach and Adrian Ely, 'Brighton & Hove's Farmland – Potentials for a More Local and Ecological Food Supply' (STEPS Centre Discussion Paper 2018) 5-7

[110] Jennifer Bishop, 'Reforming Land Tenure: Farm Business Tenancies and the Rural Environment' (1996) Conv 243

of the farm, never mind bigger innovations in ecologically sensitive practices. However, insecurity may also prevent farmers adopting innovations which might arguably be more likely to undermine the social-ecological connection; large scale mechanisation for instance. Nevertheless, it is also entirely possible for insecurity to stimulate innovative activity, as some farmers feel driven to try new things in response to uncertainty in traditional income streams. Thus for resilience it is important not to leap into interventions that address uncertainty too quickly without full consideration and iteration of issues and consequences. On this basis, the Bill's transition phase is welcome.

5. **Building capacity for transformation: law and governance**

Two major propositions have emerged so far. First, the shock of Brexit is likely to impact significantly upon the farming system by disturbing social-ecological relations across the threshold sites of struggle. Secondly, 'greening' proposals will probably fall short of a transformation without more resilience-focused policy interventions. To that extent, Brexit presents an opportunity – we would say last chance – to reverse the drift towards sustainable intensification as the main driver of policy. However, the CP is vague on key detail and limited by its emphasis upon natural capital valuation and increased productivity. We therefore turn to how interventions may be framed and targeted for farming transformations that work towards 'better' sustainability outcomes. Put in specifically resilience terms, our concern is to build capacity within the farming system, not only to avoid agricultural policy being ramped up to destructive over-intensification but also to 'bounce forward' to an agro-ecologically focused array of policies, processes and practices.

From this transformative perspective, we take law as an archetypal institution for managing human interaction with ecosystems. It has a pivotal yet double-edged role, capable of either maintaining the status quo or driving and supporting change. Law's capacity to provide a crucial feedback loop between social and ecological elements of farming gives it heightened significance for shaping or managing the critical *relationships* around sites of struggle. Law's centrality is underlined by studies of

social resilience[111] which show that self-help or voluntary actions on the part of key actors (farmers in our context) are insufficient, making additional interventions necessary.

Connections within and between eco- and social systems inspire the legal measures and governance recommendations below. In keeping with our resilience focus, we do not tie proposals to specific sites of struggle as this would be an unrealistic, rigid and inappropriately linear approach. At the outset we identify the need to recalibrate some fundamentals of legal thinking. We then focus on three strategic levers for preparing and navigating transformation: the use of public money, innovation measures and reform of legal relationships that determine land use. As any transformation still needs consolidation and long-term development, our final element provides monitoring and enforcement through embedded learning and participation in decision-making by key actors.

Our farming law and governance framework is guided by four general considerations. First, we draw upon principles of resilience set out in section 3 above. Secondly, in translating those principles into effective interventions, we utilise a palette of 'hard' and 'soft' measures ranging from property law reform and financial support to learning and participation in decision-making and monitoring. Thirdly, we refer to lessons to be learned from the CAP. Fourthly, we address structural and individual issues by combining measures about both farming and farmers.

5.1 Unlocking legal thinking: Wild Law approaches

One of the biggest obstacles to law delivering step-change in the farming SES is that any deliberate transformation must overcome the resilience features and processes of the existing system and legal framework. In particular, anthropocentric values underpinning the prevalent view of sustainable intensification are an ongoing barrier to a holistic, integrated, realistic understanding of farming as an SES in which the centre of gravity is shifted to agro-ecological practices and cultures. As noted above,

[111] Eg the EU FP7-funded project LIVEWHAT <https://cordis.europa.eu/project/rcn/111397_en.html> accessed 6 October 2018

resilience targets the interdependency of human and non-human nature and the connectivity of ecological and social thresholds. However, the current dominant value framework for law privileges the social at the expense of the ecological, presenting the non-human natural world as something separate from 'us' and to be exploited for our use.[112] This creates a tendency to make decisions on land use which fail to recognise adequately the needs and interests of non-human nature, as well as less easily quantifiable human benefits. Moreover, the established dominance of private property in legal regulation only reinforces the notion that there is no general obligation of stewardship of land for the public (environmental) good.[113]

More recent conceptual approaches, such as ecosystem services or natural capital valuation, preserve anthropocentric values as their fundamental assumptions.[114] Indeed, the centrality accorded to natural capital valuation in the EP only entrenches this perspective. To conceptualise ecosystems in terms of their benefits to mankind or how they can be monetarised might admittedly import a greater awareness of public goods considerations into policy-making. However, this is merely as part of a calculus and still misses the fundamental nature of the interdependency of earth and humans by only considering 'those elements of the natural environment which provide valuable goods and services to people'.[115] A resilience thinking approach that properly understands the complexities of social-ecological relations demands bigger adjustments to political and regulatory mind-sets.

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[112] Burdon (n 88)

[113] Richard Barnes, 'The Capacity of Property Rights to Accommodate Social-Ecological Resilience' (2013) 18 Ecology and Society 6

[114] Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach* (Routledge 2016)

[115] Natural Capital Committee, 'Economic Valuation and its applications in natural capital management and the Government's 25 Year Environment Plan' (NCC 2017) <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/608850/ncc-natural-capital-valuation.pdf> accessed 8 June 2018

Wild Law opens this pathway, demanding the creation of a legal framework which works primarily to support the functioning of vital ecosystems.[116] It emphasises the interconnectedness of human and non-human nature, the importance of ecological and social processes in ensuring sustainability and the value of participatory decision-making.[117] Like agroecology, from a Wild Law perspective sustainable land use is dependent upon the integration of culture and nature. In prioritising ecosystem health and human-nature relationships, a Wild legal and policy approach is also less inclined to rely on technological or market solutions where these are not likely to best maintain that health and those connections.[118] Prioritising intensification through advanced technologies may have significant advantages but is unlikely to accommodate the full ecological, intrinsic or spiritual value of land. Precision delivery of herbicide by machine, for instance, may reduce pollution and local water company costs but do little to safeguard a well-loved landscape. Similarly, intensive crop production on one area may not be adequately off-set by taking another out of production or purchasing an 'off-set' nearby. Human and non-human life alike may have interactions with the land which are not adequately captured in monetary terms or compensable by offering an alternative, even if the overall 'biodiversity value' is equivalent.[119]

Instead of being considered primarily as a commodity the broader value of land – and the ecosystems it supports – is central in developing the aims and obligations of Wild law, policy and practice.[120] Failure to recognise properly the inter-relationships between human and land risks damaging key ecological and social features needed to support sustainable farming, such as habitats, soils and

[116] Cormac Cullinan, *Wild Law: A Manifesto for Earth Justice* (Green Books 2011)

[117] Cullinan (n 116); Burdon (n 88)

[118] Burdon (n 88)

[119] Bonnie Holligan, 'Narratives of Capital Versus Narratives of Community: Conservation Covenants and the Private Regulation of Land Use' (2018) 30 JEL 55, 65-68

[120] Burdon (n 88); Graham (n 80)

watercourses, as well as human care and appreciation of non-human nature. A Wild Law of property presents landownership as comprising significant responsibilities as well as rights.[121] Like other more community-oriented concepts of property,[122] freedom to use the land is perceived as inherently limited by ecological considerations. As such, for a Wild Law of property, there is a higher baseline at which payment for farming sustainably need be paid than under traditional approaches.[123] Likewise, by recognising and seeking to represent diverse values in decision-making, Wild Law captures the complexity of systemic relations and need for involvement of diverse actors represented by principles of resilience thinking. Creating a post-Brexit framework for agricultural land use provides an opportunity for embedding Wild Law principles into law and policy to support transformation of the farming SES.

However, giving effect to both Wild Law values and resilience principles presents challenges. Rule of law values such as certainty and liability for harm can stand in contrast to flexible responses needed for adaptive governance.[124] Sometimes, law's focus on pre-decisional – front-end – procedures such as Environmental Impact Assessments places too much emphasis on predictability and reliability, with limited opportunity for responding flexibly to feedback.[125] Yet law can provide useful stability and guidance combined with capacity for adaptation by emphasising guiding principle over rigidly defined

[121] Burdon (n 88)

[122] For example: Craig A. Arnold, 'The Reconstitution of Property: Property as a Web of Interests' (2002) 26 Harv Envtl L Rev 281; Emily Barritt, 'Conceptualising Stewardship in Environmental Law'(2014) 26 JEL 1; Ben France-Hudson, 'Surprisingly Social: Private Property and Environmental Management' (2017) 29 JEL 101

[123] Christopher Rodgers, *The Law of Nature Conservation* (OUP 2013) 27-32

[124] Humby (n 46) 114

[125] J.B. Ruhl, 'General Design Principles for Resilience and Adaptive Capacity in Legal Systems -- With Applications to Climate Change Adaptation' (2011) 89 N C L REV 1373, 1393

outcomes and processes.[126] We maximise 'soft' law mechanisms in the form of guidance and best practice or laws which are framed broadly and include significant discretion for enforcing authorities. Balancing flexibility with certainty and accountability will still be an ongoing challenge. [127]

5.2 Public financial support: re-orienting farming values

Politically, post-Brexit agriculture cannot escape the question of whether public financial support is justifiable. Predictably, this is a central focus of the CP and its new 'land management system'. Currently the CAP framework provides financial support comprising direct payments to farmers via a basic payment scheme (BPS) and payment for rural development through agri-environment schemes (AES).[128] Farmers entitled to support under the BPS must comply with certain land management requirements including abiding by all relevant laws and meeting basic standards of, for example, soil conditions and crop rotations. Additional 'greening' obligations were introduced in 2013 requiring maintenance of permanent grassland, crop diversification and creation of 'ecological focus areas' on arable land.[129] Farmers may also apply to join an AES - currently Countryside Stewardship – where additional payments are available for farming with enhanced environmental, climate and recreational benefits.[130] Although successive reforms have undeniably moved away from an exclusively productivist paradigm,[131] the shortcomings and unintended consequences of CAP strategies have been apparent for some time. For example, allocations based on land area mean that bigger farms get

[126] Barbara A. Cosen and others, 'The Role of Law in Adaptive Governance' (2017) 22 Ecology and Society 30

[127] Humby (n 46) 113

[128] Regulations (EU) 1307/2013 and 1305/2013 of the European Parliament and Council of 17th December 2013 OJ L347/608 and L347/847 respectively

[129] Regulation 1307/2013 (n 127), Arts 44-46.

[130] https://www.gov.uk/guidance/countryside-stewardship-manual

[131] EU Commission, *The Future of Food and Farming* (COM) 2017 713 final

more support; to the point where 25% of farms capture nearly three-quarters of public subsidy.[132] Moreover, payments are made whether prices are low or high so that any risk protection element to direct subsidies seems misplaced.[133]

The financial system envisaged in the Bill is based on the mantra of 'public support for public goods' instead of income support. Certainly, paying farmers to 'produce' biodiversity, capture and store carbon and promote recreational access and education recognises value provided for the wider community at personal cost. Such a shift of emphasis from support to 'payment' is critical to the recalibration of the social-ecological relationship. Paying farmers to produce environmental and recreational outputs may engender cultural change more effectively than previous policies, as well as directly incentivizing more sustainable practices or outcomes. The 'good farmer' is still able to make a living by being a good producer – a key identity factor – but now producing environmental goods alongside food. In other words, using financial tools to alter the critical social-ecological nexus mitigates the kind of security threat that may otherwise hinder transformation whilst also lending political and cultural legitimacy to a longer-term redefinition of the purpose of farming. From both a resilience and agroecological perspective diversity and flexibility are key features of any payment scheme so that – depending on context – farmers on highly productive land can continue to concentrate on food production, whilst other equally 'good' farmers deliver a higher proportion of environmental goods. This does not mean that 'good' land should always be productive and 'poor' land the subject for environmental action – on the contrary, resilient transformation requires any such bifurcation or stigmatization to be avoided in favour of a contextualised systemic approach.

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[132] Natural Capital Committee, *Advice to Government on the 25 Year Environment Plan* (NCC 2017) <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/650314/ncc-advice-on-25-year-environment-plan171009.pdf> accessed 8 June 2018

[133] Allan Buckwell and others, 'CAP – Thinking Out of the Box: Further Modernisation of the CAP – Why, What and How' (RISE Foundation 2017)

The boundaries of 'public goods' were left open by the CP for further discussion with section 1 of the Bill providing the Secretary of State with significant discretion to determine the priorities for financial assistance. So, for example, financial support might be a lever for encouraging polycultures, mixed (livestock-arable) farming and use of less-commercially popular varieties to promote food security, increase biodiversity and buffer periods of uncertainty. Diversity in food production may also enable consumer demand to be met with reduced transportation costs as well as helping farmers to achieve a steadier income by spreading the risk over different markets. A policy question is whether farmers should be given incentives to diversify food production, for example into fruit and vegetables where the UK has high reliance on imports.[134] Payments should only be available if necessary for the growth of fruit and vegetable production and that such growth is valuable for the sustainability of the farming SES, whether in terms of long term security of food supply or significant ecosystems. Food may be a private good but food security, like functioning ecosystems (soil and water) and attractive landscapes is arguably a public good on which public money could be spent if the market will not supply it.[135]

However, any new payment package can only facilitate the process of transforming the farming SES if it is built, applied and monitored with a close regard for the dynamics that affect critical thresholds. A financial framework of itself is no guarantee of effective outcomes, as CAP experience has shown. 'Greening' payments have not significantly enhanced environmental performance, with a change in farming practices in around only 5% of EU farmland.[136] These 'greening' elements of the BPS payment may have been well-intended yet little evidence was produced in support of the ecological need for such a component, which either replicated what farmers were already doing or required them to do

[134] Olivier De Schutter, Farmers Weekly 6 January 2017, 8

[135] EAC (n 73) paras 53-54

[136] European Court of Auditors, *Greening: a More Complex Scheme, Not Yet Environmentally Effective. Special report no 21* (2017)

something inconvenient for little value.[137] To foster the transformation towards agroecology any new scheme must do more to incentivise a diverse system with low-chemical inputs than under the CAP.[138]

Accordingly, whilst financial incentives may mitigate security risks, the creation, focus and application of such payments also need to take place in accordance with resilience principles of 'bottom up' governance and participation. Shifting the paradigm values of farming in an agroecological direction cannot be done without building systemic capacity around the 'identity' and 'connection' sites of struggle. In the past, farmers have reported interactions with government agencies in which their real-world knowledge and insights are not reflected in regulatory obligations. Instead, their potential contributions are disregarded in favour of the 'expert' conservationist[139] such that lack of 'ownership' has been a significant reason for limited uptake of agri-environment schemes.[140] However, recent studies suggest that, given opportunities to have their views properly integrated into policy development, farmers feel greater ownership of the resulting policy and a stronger willingness to commit.[141] Any new scheme must be developed from sound evidence with appropriate empirical and experiential input from farmers so that 'public' obligations are meaningful and schemes attract take-up.

[137] Guy Pe'er and others, 'EU Agricultural Reform Fails on Biodiversity' (2014) 344 *Science* 1090

[138] FAO (n 11) 45

[139] Carol Burgess and others, 'Knowledges in Action: an Actor Network Analysis of a Wetland Agri-environment Scheme' (2000) 35 *Ecological Economics* 119; Margherita Pieraccini, 'Rethinking participation in environmental decision-making: epistemologies of marine conservation in south-east England' (2015) 27 JEL 45 (in the context of fisheries)

[140] EAC (n 73) paras 65-66

[141] Mark Riley, How Does Longer Term Participation in Agri-environment Schemes [Re]shape Farmers' Environmental Dispositions and Identities? (2016) 52 Land Use Policy 62

Similarly, a post-Brexit scheme must be more flexible and responsive to feedback than the rigidities of the CAP.[142] Farming thus reflects wider calls for collaborative governance approaches which incorporate effective listening to a range of voices and willingness to adapt policies on the basis of those inputs.[143] Recent steps – the EP and the 2018 consultation exercise itself – suggest some commitment to ensuring farmers can participate in development of policy and the structure of regulatory obligations. But resilience requires ongoing participation, beyond policy formulation to post-enactment review. Where relationships between farmers and advisors or regulators are well-developed they provide knowledgeable assistance to the farmer on conservation and a conduit back to policy-makers of the impacts of policy on the ground. Visits may also provide a feeling of connection to a wider network in an isolated and lonely profession. Whilst contact time may be financially costly, the value in terms of learning by both parties, changing cultural expectations and emotional security appears high. The pledge to ongoing support for advice services[144] is a positive and an effective mechanism for improving engagement and compliance if properly funded. Reference in the CP to trialling new approaches with farmers and land managers is positive[145] but it is unclear how much commitment exists to ongoing feedback or how to achieve it.

The success of financial reform also depends on appropriate and effective levels of funding. Payment cannot simply become 'income support' by the back door; it must be calibrated to properly value the public goods being produced and recognise the costs being borne by producers. From a Wild Law perspective this should take into account the inherent responsibilities contained in landownership and

[142] Pe'er (n 137)

[143] Neil Gunningham, 'Environment Law, Regulation and Governance: Shifting Architectures (2009) 21 JEL 179; Burns Weston and David Bollier, *Green Governance: Ecological Survival, Human Rights and the Law of the Commons* (CUP 2013); Olivia Woolley, *Ecological Governance* (CUP 2014)

[144] DEFRA (n 1) 37

[145] DEFRA (n 2) 36

increasingly recognised as such.[146] On this basis payment for some existing BPS obligations, such as maintaining basic soil health,[147] could be deemed unnecessary.[148] However, future land management obligations must strike a fair balance between the burden imposed on individuals and the corresponding public benefit.[149]

Ultimately, for agriculture to be transformed payments must enable a high proportion of those who wish to engage in environmentally beneficial farming to do so profitably. And not just those who possess the largest farms. Any evidence-led, flexible approach needs to accommodate the particular contributions of specific types of farm and their challenges. This highlights the good reasons to continue to support small and vulnerable farms which perform the important resilience roles identified in s3 above. Some basic support may be needed simply to enable these farms to survive, enhanced by public goods payments for the more environmentally friendly practices they undertake. The CP recognises the potential need to provide tailored support to certain sectors, notably sheep farmers.[150] The NFU has also stressed the special vulnerabilities of upland farmers.[151] The transitional terms envisaged by the Bill[152] face the twin challenges of not losing the existing diversity of farms and farmers and being slow enough to promote sustainable transformations.

[146] France-Hudson (n 122)

[147] For example GAEC 4,5 and 6 in DEFRA, *The Guide to Cross Compliance in England 2018* (DEFRA, November 2017)

[148] Ian Hodge, 'Agri-environment Policy in an Era of Lower Government Expenditure: CAP Reform and Conservation Payments' (2013) 56 J Environ Manage 254, 265-266

[149] *R (on the application of Mott) v Environment Agency* [2018] *UKSC* 10

[150] DEFRA (n 2) Ch 8

[151] Farmers Weekly 27 April 2018, 18

[152] s5(1), (n96)

5.3 Facilitating learning and innovation

Building transformative capacity requires support for learning, experimentation and innovation by farmers.[153] Whilst acknowledging that technology does not address the wider systemic change needed for long term sustainable food production and so cannot be a panacea itself, law and policy can support technological advances that have sustainability benefits.[154] The EP places significant emphasis on the role of new technologies in sustainable food production[155] and the CP refers to farming as a 'capital intensive industry' with technology integral to farming profitability.[156] Developments such as precision farming using robotics, artificial intelligence and genetic modification are likely to be highly valuable in reducing environmental impacts of farming and enhancing efficiency. However, resilience concerns arise if new technologies are developed and marketed too quickly. Without real, long-term testing taking place new technology can generate fresh, unintended, negative ecological or social consequences which take the system further from the objective of ecological sustainability. In this respect reform should encourage a wide array of small-scale innovations and experimental case studies at levels where the approach trialled is safe to fail both in terms of the ecosystems that might be affected and the farm, farmer and community.

Innovation for transformation can also be supported by incentivising the development of agroecological techniques.[157] This, crucially, need not be confined to new technologies but could encompass developments in traditional practices and knowledge such as crop rotation, integrated pest management and hedge-laying. Although labour intensive these are high-value for

[153] FAO (n 12)

[154] Ibid 4

[155] DEFRA (n 1) 36

[156] DEFRA (n 2) 25

[157] FAO (n 12) 13

transformation as they foster diversity and flexibility within the system as well as promoting connection with land. Supporting farmers to work at a smaller scale, in closer proximity with the soil and species on their farm, encourages enhanced connection and relationship with the land, of the kind more likely to empower and incentivise the long term ecological care of that land.[158] Innovation and development in traditional farming practice is also perhaps more likely to occur at the farm level or involve research activity with farmers than new technologies and so foster the local, bottom-up adaptations that are appropriate for agroecology and advocated by resilience thinking.[159] The EP and CP recognise the importance of some of these more traditional practices.[160] But support for research and innovation appears focused almost entirely on new methods[161] with more traditional, agro-ecological approaches relegated to Chapter 11 of the CP and the idea of farming 'excellence' linked firmly to the adoption of new technologies.[162]

Incentives for learning and innovation may be financial as well as personal satisfaction and cultural capital. The proposal for capital grants for sustainable practices in addition to the new payment scheme for environmental land management is helpful.[163] Again, lessons can be learned from defects of the CAP regime, which was not designed to incorporate the learning of farmers or to promote innovation; even its agri-environment schemes proved complex and overly prescriptive.[164] A scheme which allocates payment by results has the potential to foster experimentation and further empower

[158] Bruce Ball and others, 'A Framework of Connections Between Soil and People Can Help Improve Sustainability of the Food System and Soil Functions' (2018) 47 Ambio 269

[159] Chandler (n 28) 52

[160] DEFRA (n 1) 40,43; DEFRA (n 2) 55

[161] DEFRA (n 2) 25-28

[162] Ibid 24

[163] DEFRA (n 2) 37

[164] EAC (n 73) para 65

farmers by enabling them to choose outcomes they value and are appropriate for their farm and landscape. This requires a wide range of options[165] challenging enough to require sensitive but innovative land management, not just permit 'business as usual'. There are additional concerns that many desired outcomes are difficult to define and monitor,[166] but in a good example of resilience-thinking, Natural England is conducting small trials of the payment by results approach using indicator species which do not require specialist skills to identify.[167] The potential of this approach is recognised in the CP, following the results from another pilot by Natural England.[168] However, care must be taken to ensure that emphasis on outcomes does not stifle legitimate attempts to solve problems creatively.

Opportunities for learning are accordingly essential. Soft law in the form of written guidance is valuable here.[169] This gives practical advice on compliance with obligations, explains the ecological and agricultural value of many practices and provides suggestions for more ecologically sustainable techniques beyond those required by law.[170] As an efficient way of fostering awareness of more agroecological practices, guidance could be enhanced with more experimental approaches. However, as discussed above, this must be in addition to support from advisors who understand agroecology and with whom the farmer can create a dynamic relationship. The proposed support for peer to peer learning is particularly welcome because structures for collaborative learning amongst farmers can

[165] Ibid para 66 (evidence of the Tenant Farmers' Association)

[166] Ibid para 70 (evidence of the Country Landowners Association)

[167] Ibid para 30

[168] DEFRA (n2) 41

[169] DEFRA, *Protecting our Water, Soil and Air A Code of Good Agricultural Practice for Farmers, Growers and Land Managers* (DEFRA, 2011)

[170] Ibid for example Ch 3

build capacity for transformation by enabling the horizontal spread of agroecological approaches.[171] Agricultural education is vital, with provision for both new entrants and established farmers a key part of orienting future farmers' cultural expectations and capacities for environmental management. The CP further highlights the importance of post-16 educational pathways into farming[172] including one linking agriculture and environment. This is a step in the right direction but it could suggest an ongoing separation rather than complete integration of environmental considerations within farming. Ensuring that agroecological approaches are fully integrated into agriculture teaching – and wider schooling - is vital to achieving a more sustainable farming future.[173]

As emphasised throughout, a resilience approach must understand the interconnections of factors in the farming SES. Innovation is a pivotal issue that sits at the heart of the social-ecological dynamic and cuts across all the sites of struggle affecting the future direction of change. Small farms, again, are a crucible in which innovations may be nurtured and trialled but are also at perhaps greatest risk of financial insecurity because of the high labour costs involved.[174]

5.4 Reforming legal relationships concerning land use

A notable gap in both the EP and CP is consideration of regulatory issues around availability of land for farming. Market forces are unpredictable, although withdrawal of Direct Payments may reduce the value of land to buy or rent and so make access for new entrants slightly easier.[175] A more direct

[171] FAO (n 11) 18; Fikret Berkes, 'Environmental Governance for the Anthropocene? Social-Ecological Systems, Resilience, and Collaborative Learning' (2017) 9 Sustainability 1232

[172] DEFRA (n 2) 29

[173] Miguel Altieri and Charles Francis, 'Incorporating Agroecology into the Conventional Agricultural Curriculum' (1992) 7 American Journal of Alternative Agriculture 89; FAO (n 11) 21-22

[174] CPRE (n 99); Laughton (n 99); Winter (n 100)

[175] DEFRA (n 2) 13

intervention could encourage local authority landholding to be used more effectively.[176] Presently local authorities have no legal obligations to prioritise selling or renting their rural holdings to farmers practising more agroecological methods, or to hold smaller plots of land to enable new entrants to experiment and gain experience.[177] Such reform might facilitate a new wave of farmers keen to engage in more sustainable practices. It may also be possible to make further use of planning policy and planning 'advice' currently used by some local authorities to promote sustainable urban growing.[178] Planning authorities could be required to give significant weight to the incorporation of space for agroecological growing as part of a development, perhaps in combination with additional support to the burgeoning Community Land Trust movement.[179] The CP makes brief reference to working with councils to ensure the existence of community farms but lacks detail.[180]

Better support for transformation to sustainability across all the sites of struggle could come from changes in the law relating to agricultural tenancies. Currently some language and content of the law undermines transition by contributing to the persistence of the good farmer identity in the productivist mould. The obligation of 'good husbandry',[181] for instance, discourages extensified land practices by the tenant which might result in lower yields for ecological gain.[182] In resilience terms this reduces the flexibility for tenants to engage in diverse practices and ecologically beneficial

[176] Wach and Ely (n 109)

[177] Ibid

[178] For example <https://www.brighton-hove.gov.uk/content/planning/planning-policy/planning-advice-notes-pans> accessed 8 June 2018

[179] http://www.communitylandtrusts.org.uk/ accessed 8 June 2018

[180] DEFRA (n 2) 25

[181] s11 Agriculture Act 1947

[182] Christopher Rodgers, 'Rural Development Policy and Environmental Protection: Reorienting English Law for a Multifunctional Agriculture' (2009) 14 Drake J. of Agric. L. 259; Bishop (n 110) 244

experimentation because of impact on the security of their holding. The significance of this obligation has been reduced by successive legislation,[183] but many leases still incorporate the 'good husbandry' requirement given the need for some frame of reference by which to judge the tenant's behaviour and the lack of an alternative, updated, version of good husbandry in law.[184]

Moreover, as discussed above, the Agricultural Tenancies Act 1995 also reduced the security of tenure enjoyed by tenant farmers. This has implications across systemic thresholds. Short leases provide reduced opportunity and incentive to develop a relational connection with the land.[185] Shorter time scales may also discourage farmers from trying agroecological practices which might lower yields – especially where those practices are experimental – and from joining agri-environment schemes.[186] In other words, the legal framework promotes the persistence of productivist culture and an insecurity which may inhibit transformative activity. The CP sought views regarding the impact of agricultural tenancies on new entrants but with little emphasis on law reform.[187] Security for existing farmers must be balanced with ensuring that landowners are willing to offer land for rent so that sufficient land is available for new entrants. Limited reform could be explored to better reflect the multifunctional farming role and whether minimum terms could be introduced which recognise both the need for land availability and for security and connection with that land, such as the ten-year term advocated by the Tenant Farmers Association.[188] We would also advocate the development of a more ecologically

[183] Most recently the Agricultural Tenancies Act 1995

[184] Rodgers (n 182) 286

[185] Elizabeth Gosling and Kathryn J.H. Williams, 'Connectedness to Nature, Place Attachment and Conservation Behaviour: Testing Connectedness Theory Amongst Farmers' (2010) 30 Journal of Environmental Psychology 298

[186] Rodgers (n 182); Xavier Lastra-Bravo and others, 'What Drives Farmers' Participation in EU Agri-environmental Schemes?: Results from a Qualitative Meta-analysis' (2015) 54 Environmental Science and Policy 1

[187] DEFRA (n 2) 26

[188] TFA (n 106)

sustainable successor to the 'good husbandry' obligation, drawing on Wild Law to reflect an expectation of tenants' responsibilities to farm in an ecologically sustainable manner.

5.5 Monitoring and enforcement

The farming SES is always incomplete and changing, and so far we have explored factors important in preparing and navigating transformative shifts. However, resilience is an ongoing learning process, without which any transformation may unravel or be unpicked. Monitoring the functioning of the system and the success or otherwise of obligations undertaken by farmers in exchange for public money is key, together with feedback on non-financial strategies. Yet approaches to monitoring and enforcement of obligations have been persistently problematic. In particular, there has been a failure to require information about not only significant ecological thresholds, such as the state of soil health,[189] but also social thresholds, such as loss of small farms, farmers feeling compulsion to sell and so on. The EP emphasises sound soil management and the proposal to implement a useable soil monitoring mechanism is positive.[190] However, a monitoring programme equivalent to Natural England's Monitor of Engagement with the Natural Environment, which assessed socio-economic and socio-ecological connection trends, could provide valuable feedback.[191]

Monitoring is also vital in ensuring that farmers are complying with their general legal obligations besides meeting their targets under any payment scheme. To best promote transformative capacity, mechanisms for monitoring and enforcement would involve and empower farmer networks, encourage experimental approaches and enable feedback.[192] However, there has been a tendency for

[189] EAC (n 81) 29

[190] DEFRA (n 1) 43

[191] Natural England, *Monitor of Engagement with the Natural Environment, Headline Report from the 2015-16 Survey* (NE, May 2017)

[192] Garmestani (n 49) 371

monitoring and enforcement arrangements to be seen by farmers as inflexible and disempowering and penalties as disproportionate.[193] On this basis the current review of farm inspection regulations is to be welcomed.[194] We recommend a greater role for peer monitoring and enforcement of compliance with conditions attached to payments. Natural England and the Rural Payments Agency (RPA) would still conduct oversight and enforcement, especially as this may become more challenging with the potential loss of the Basic Payment Scheme to ensure cross compliance with environmental obligations.[195] Nevertheless, regional panels of farmers could provide a degree of advice, oversight and possess limited powers of enforcement. The CP advocates greater industry self-regulation.[196] Such an approach may address issues of ownership and empowerment and provide more flexibility in deciding whether breaches have occurred, but determining panel membership would need care. Farmers cannot be expected to have knowledge of all aspects of countryside management included within new payment schemes, with land management to protect archaeology or rare flora requiring specialist experience, for example. If local or regional panels are used to allocate payments under a new system these must comprise a diverse range of stakeholders and expertise if schemes are to be administered fairly and effectively. Instances of serious or repeated breach would remain cases for the more extensive powers of the RPA.

We see the crucial hub for peer monitoring and enforcement as the farmer 'cluster', formed of groups of farmers and other land managers in a region for purposes of learning and support. Instigated by the Game and Wildlife Conservation Trust,[197] their development has been facilitated by support and funding from Natural England and have been used to test experimental strategies for conservation at

[193] Gove (n 20)

[194] DEFRA, *Farm Inspection and Regulation Review – Terms of Reference* (DEFRA, May 2018)

[195] EAC (n 81) para 37

[196] DEFRA (n 2) 50

[197] <https://www.gwct.org.uk/> accessed 5 June 2018

landscape scale.[198] Opportunities to embed knowledge, extend awareness of others' activities and identify new possibilities for innovation can be achieved by involving farmers more centrally in the administration of new or replacement agri-environment schemes.[199] Using clusters (and other organisations, for example National Parks) as governance mechanisms through which bidding for schemes and primary enforcement takes place encourages the co-operation between groups of farmers and other land managers, building transformative capacity.[200] Working together can overcome the inflexibility of agri-environmental schemes that would only be available to individuals and allow audit by the group as a whole to maintain a sense of autonomy and control.[201] Co-operation can also provide more effective and creative responses to environmental concerns at the landscape scale. Bringing farmers together is likely to encourage a more integrated approach to effective management of soil, water and habitat in an area and help to ensure farming stays within key ecological thresholds. But clusters also have the capacity to strengthen the social-ecological connection across the sites of struggle, particularly by providing a forum for challenging cultural identities and improving feelings of security. If farmers can recognise the value of environmental schemes themselves and – crucially – feel that these are farming activities respected by their peers then this would be beneficial in dealing with the social pressures that might otherwise deter ecological activity or empathy[202] as has been seen in the context of farms located near nature reserves where farmers have 'not wanted to let the side down'.[203] However, whilst the EP and CP recognise a potential

[198] For example 'Dartmoor Farming Futures' in DEFRA (n 2) 47

[199] EAC (n 81) 28-29

[200] FAO (n 11) 18

[201] Wynne-Jones (n 64)

[202] Burton (n 59)

[203] Mills (n 58)

role for collaboration amongst farmers and land managers, they do not give clusters sufficient weight or commit to providing incentives for their development.

6. Conclusions

We have invoked resilience thinking as the key to maximising sustainability in the post-Brexit landscape of English agriculture. In particular, we have emphasised the importance of using resilience principles of scale, diversity, flexibility and 'bottom-up' governance in building capacity in relation to critical thresholds of the farming SES embracing identity, connection and security. We have stressed the interdependence of social and ecological factors and given particular weight to the need to adopt strategies to combat degradation of cognitive human capital. Alongside the importance of evidence to inform policy, we also point out the value of the experiential connection of individual farmers to their land in establishing resilience. Legitimising and unlocking that resource by polycentric mechanisms can play a huge part in identifying, foreseeing and responding to disturbances, whether cultural, economic, technical or ecological. Empowerment of *farmers* is accordingly fundamental to the resilience of *farming.* At the same time, resilience must acknowledge and accommodate scales – so that the landscape level of understanding and action is crucial for better appreciation of ecological effects and effective planning.

A running theme has been to critique sustainable intensification and call for greatly enhanced roles for traditional farming techniques, small farm units and the preservation of human commitment, connection and land-related knowledge. There are signs that shifts in attitude and behaviour are occurring – witness the number of 'green' farming organisations, online groups and emerging fora in which experiences and sustainable innovations are shared and developed. However, there is a problem – which we address by firm recommendations – in the extent to which resilience is conceptualised in policy and anchored in action. It is a particular disappointment that the CP only expresses resilience in terms of productivity and new technologies. We also fear that the emphasis

upon natural capital valuation misses, or at least understates, the significance of connection in human-nature relations.

Of course, our proposals cannot be exhaustive, nor are they intended to be. Transformation by its very nature is radical, albeit capable of being staged, progressive and flexible. It is also likely to be contested. Our message is that there are huge risks in the post-Brexit policy landscape – especially if agriculture is sacrificed for other goals in leaving the EU. Political compromises may lock in the 'wrong' solutions at an early stage and could do long-lasting damage both ecologically and socially to the farming industry and communities. Hence our call to facilitate and build options at individual farm and landscape levels which maintain diversity, flexibility and an embedded commitment to sustainability. Resilience-framed strategies and appropriate legal changes are essential if a sustainable 'green Brexit' is to be more than aspiration or rhetoric.